EUGENICS RECORD OFFICE—MEMOIR No. 1

THE HILL FOLK

REPORT ON

A RURAL COMMUNITY OF HEREDITARY DEFECTIVES

BY

FLORENCE H. DANIELSON, M.A.

FIELD WORKER, EUGENICS RECORD OFFICE

AND

CHARLES B. DAVENPORT

DEPARTMENT OF EXPERIMENTAL EVOLUTION, CARNEGIE INSTITUTION OF WASHINGTON

WITH THREE FOLDED CHARTS AND FOUR TEXT FIGURES

COLD SPRING HARBOR, LONG ISLAND, N. Y.

AUGUST, 1912

PRESS OF
THE NEW ERA PRINTING COMPANY
LANCASTER, PA.

CONTENTS.

PREFACE.

This memoir is the first of a projected series which is intended to embody some of the more extended researches of the Eugenics Record Office, especially such as, on account of extensive pedigree charts, require a page of large size. Against the inconvenience of the quarto size has to be balanced the very practical necessity of a large surface to show relationships in a great network.

The present memoir is a study of a rural community of a sort familiar to sociologists in the work of Dugdale and of McCulloch in this country. The work began in connection with studies on the pedigree of some inmates of the Monson State Hospital, at Palmer, Mass. Miss Danielson was assigned by the Eugenics Record Office to work at that institution under the direction of its Superintendent, Dr. Everett Flood. Dr. Flood gave Miss Danielson every facility for prosecuting this inquiry, and took the broad stand that it is quite as desirable to make an extensive study of all the connections of an epileptic subject as to make numerous brief pedigrees of a much larger number of inmates. This memoir is the product of such an extended inquiry. The thanks of the Record Office, and, I am sure, of all students of human heredity and of sociologists, are gratefully offered to Dr. Flood, as well as to the trustees of the Hospital, of whom it may not be invidious particularly to mention Dr. W. N. Bullard, chairman of the Board.

The primary value of this memoir is, it must be confessed, to the sociologist rather than to the student of inheritance of human traits. Our field work of the first year has hardly risen to the point of analysis required for a study of heredity. This work will take much more time and will come later. But the sociological importance is clear. We are dealing with a rural community such as can be found in nearly if not quite every county in the older states of the union, in which nearly all of the people belong to the vague class of the "feebleminded"—the incapable. The individuals vary much in capacity, a result which follows from the complexity of their germ plasm. Some have capacities that can be developed under proper conditions, but for many more even the best of environmental conditions can do little. They must remain a drag on our civilization; a condition for which not they, but society, is responsible. It is to be hoped that a presentation of the facts will hasten the so much desired control by society of the reproduction of the grossly defective.

All of the field work on which the report is based, the preparation of the charts, and the writing of the major portion of the text, including all of the tabular matter and the Appendix are the work of Miss Danielson. Grateful acknowledgment is made of the financial assistance of Mr. John D. Rockefeller in the publication of this report. The expense of the study was borne in part by the Monson State Hospital and in part by Mrs. E. H. Harriman.

C. B. DAVENPORT.

THE HILL FOLK

I. INTRODUCTION

The following report is the result of an investigation of two family trees in a small Massachusetts town. It aims to show how much crime, misery and expense may result from the union of two defective individuals—how a large number of the present court frequenters, paupers and town nuisances are connected by a significant network of relationship. It includes a discussion of the undesirable traits in the light of the Mendelian analysis. It presents some observations concerning the relation of heredity and environment, based on their effects upon the children. While it is not an exhaustive study of all the ramifications of even these two families and their consorts, it may be sufficient to throw some light on the vexed question of the prevention of feebleminded, degenerate individuals, as a humane and economical state policy.

In the fall of 1910 a field worker from the Eugenics Record Office was placed in the employ of a state institution to study the inheritance of certain traits. One of the cases which was investigated led to a community where feeblemindedness, immorality, and alcoholism were rife. An investigation of the group of families which showed these traits followed. It brought to light the fact that all these families were connected by marriage, some of them by consanguineous marriages, and that practically all of them could be traced back to one of two original sources. The economic and educational influences in this rural district have not been abnormal, but from the nucleus of these two families has developed a shiftless, weakminded element which is notorious in the county.

The town in question lies in a fertile river valley among the New England hills. It is on the direct railway line between two prosperous cities. East and west of it are more hilly, less productive towns. Its present population is about 2,000. Most of the people are industrious, intelligent farmers. A lime kiln and a marble quarry are the only industries of importance. In summer the population is nearly doubled by city boarders.

Into one corner of this attractive town there came, about 1800, a shiftless basket maker. He was possibly of French origin, but migrated more directly from the western hill region. About the same time an Englishman, also from the western hills, bought a small farm in the least fertile part of the town. The progeny of these two men, old Neil Rasp,* and the Englishman, Nuke, have sifted through the town and beyond it. Everywhere they have made desolate, alcoholic homes which have furnished State wards for over fifty years, and have required town aid for a longer time.

*The few names which are used in the description of this community are fictitious. The local setting and the families and all the other details actually exist, but for obvious reasons imaginary names are in every case substituted for the real ones.

Enough of the families still live in the original neighborhood so that, although they occupy tenant houses of respectable farmers, for they own no land now, the district of "The Hill" is spoken of slurringly. Where the children have scattered to neighboring towns, they do not remain long enough to secure a residence and are consequently referred back to the original town when they require outside aid. As the younger generations have grown up, they have, almost without exception, married into American families of the same low mental grade, so that "The Hill" people are linked by their consorts to a similar degenerate family a hundred miles away.

The attitude of the townspeople is that of exasperated neighbors. They have lived beside these troublesome paupers for so long that they are too disgusted with them, and too accustomed to the situation, to realize the necessity for aggressive work upon it. A few of them realize that hard cider is a large factor in the cause of their neighbors' poverty, but more of them, apparently ignoring the fact, keep it on tap free or sell it. This poor class of people are left largely to themselves until they need town aid, or some member becomes so drunk that he disturbs the peace, or some girl becomes pregnant and has to be taken to an institution. About once every eight or ten years, a state agent is informed of the conditions, and four or five children are removed from the families. Then the father and mother find that their financial problems are relieved for the time and settle down to raise another family.

A few of the men and some of the women have soldier's or widow's pensions and state aid, but most of them work, when they do work, as wood choppers or farm laborers. Most of their wages go for hard cider or, if handed to the wives, are spent in other equally foolish ways. They move frequently from one shanty or tumbled down house to another. So long as food and a small amount of clothing are furnished by some means, they live in bovine contentment.

From the biological standpoint, it is interesting to note that mental defect manifests itself in one branch of the pedigree by one trait and in another branch by quite a different one. Thus, in one line alcoholism is universal among the men; their male cousins in another line are fairly temperate, plodding workers, but the women are immoral. Another branch shows all the men to be criminal along sexual lines, while a cousin who married into a more industrious family has descendants who are a little more respectable. These people have not been subjected to the social influences of a city or even of a large town, so that the traits which they show have been less modified by a powerful social environment than those of urban dwellers.

Even under these conditions, a study of their germ-plasm is full of complexities. One can readily conceive of the difficulties of analyzing an individual's characteristics and placing him concisely in a certain class, even after a prolonged acquaintance. The problem that a field worker meets is to analyze each person in the pedigree in respect to his mental and moral traits from a brief acquaintance and from a comparison of the descriptions of others. After all the evidence from personal visits, interviews with relatives, physicians, town officials, and reliable neighbors, and facts from court and town records have been collected, it is, even then, difficult to represent these characteristics

exactly by the standard symbols which are used for the biological study of inherited traits. The distinction between an ignorant person who has normal mental ability and a high grade feebleminded one who has not, is often as impossible to make as that between medium and low grade feeblemindedness. The term normal, therefore, as it is used in these descriptions is often applied to a person on the borderline, so that only a few of the "normals" are clear cut, ordinary persons, but most of them fall into that category from a lack of sure evidence of any striking censurable defect. So in this report, hard and fast lines are not drawn, but the symbols which most closely represent the character are placed on the chart and the description supplies more detailed information.

II. EXPLANATION OF CHARTS

The scheme which has been adopted to represent the descent from the common ancestors in this pedigree is that of a wheel. The lines which diverge from the center to the first circle indicate the children of the original couple. The descendants of this second generation in turn form the second circle, and the lines which indicate their descent diverge from the line of union between their parents. Considering the common ancestor as the first generation, the generations are numbered with Roman numerals. The individuals in each generation are numbered by Arabic figures, independently of other generations and are referred to in the descriptions by the generation number and their consecutive number in that generation, as I 2 or III 16. When an individual appears twice on the chart through a cousin marriage, he is always designated by the number which indicates his descent.

A key of the symbols and letters accompanies each chart, but a word of explanation in regard to the use of F and Sx is due. A distinction has been made, in the grades of feeblemindedness, between high and low. The former term, represented by the F in a white square or circle, refers to those persons who support themselves in a meager way, but who lack ambition, self-control, common sense and the ordinary mental and moral capacity for differentiating right and wrong; the latter, represented by the solid black square or circle with the F in white, refers to those who are not capable of self-support, and who are a special menace to the community from their lack of all mental and moral stamina.

The other symbol which may require explanation is Sx, which refers to a lack of self-control that takes the form of illicit relations with the opposite sex. This is used to indicate a distinct trait rather than the mere breach of social law. It refers to those persons in whom the sex impulse and self-control are not balanced, but in whom the former is relatively stronger; in such persons, then, the sex impulse works unhindered. Not all persons who have made illegitimate unions are marked Sx on the charts, but only those where this trait seems, from the history of the case, to be the direct cause of the illegitimacy.

The same general scheme has been used on each of the three charts. The first one represents the Rasp family, which is connected by marriage to the Nuke family, which in turn is plotted on Chart B. Chart C represents the descendants of a branch of the

Rasp family, viz., a brother of the original Neil Rasp, I 1, on Chart A. It also includes a family which is closely connected by marriages with both the preceding pedigrees.

III. GENERAL SURVEY OF THE STRAINS STUDIED AND THEIR TRAITS

A brief survey of the charts will be sufficient to show the trend of the characteristics of each group of descendants from the original ancestors. On Chart A, the larger of the two principal families originated from a very alcoholic, shiftless man and his feebleminded wife. All of their five children were feebleminded to a greater or less extent and produced offspring who vary widely in their characteristics of feeblemindedness.

The children and grandchildren of II 1 are shiftless and deficient in a general way, and in some instances have uncontrolled sexual instincts. The daughter, II 1, married a man who was her inferior in mental ability and five of their six children were feebleminded; the sixth died at nineteen years of age. One son, who married an immoral woman and had a family of eleven children, was imprisoned for incest with his daughter, and two of his children show uncontrolled sexual desires. All of them are feebleminded and some of his grandchildren are also. One daughter, III 7, had only one child by an alcoholic man, and this child was not particularly defective. Another daughter, III 9, kept a house of ill-fame. She had three children, one of whom is very shiftless and feebleminded, another one has migraine, but appears fairly intelligent, and the third one has not been located. The last son, II 11, married his own cousin and had three children, viz., an imbecile daughter and two sons, one alcoholic, and one epileptic.

The descendants from the most feebleminded daughter in the second generation, II 4, are characterized by abnormal sex instincts, some feeblemindedness, and, where a better stock has been introduced through outmarriage, by some normal traits. This daughter married an extremely alcoholic man and four of her seven children are criminal, three of them having committed serious crimes against sex. One daughter, III 12, married her own cousin; she also had a mulatto child, and finally two illegitimate children by another cousin. Another daughter is immoral and still another is a pronounced neurasthenic. Some of the grandchildren also show feeblemindedness and uncontrolled sexual instincts, while others who have descended from a union of this stock with a normal strain, seem to be normal or only neurotic.

The offspring of the only son, II 6, are extremely alcoholic, more alcoholic than any other branch of the pedigree. They are also shiftless and consequently very poor. They exhibit a high grade of feeblemindedness and some normal traits. This son was married twice. Both of the alcoholic sons by his first wife have large families of ten and eleven children. Most of these children are feebleminded, and some of them have been removed from home on the grounds of neglect. The second wife was a high-grade feebleminded woman with a cleft palate. Six of their eight children are feebleminded, one of them is a cretin, and another has a cleft palate. Two girls are fairly normal, one married a normal man and has normal children; the other married a feebleminded man with a hare-lip and has some normal and some feebleminded children.

The descendants from the third daughter, II 8, who married into a normal strain

show a very high grade of feeblemindedness. One son committed rape. There were four sons but only two of them have families of any size; and one of these married a cousin. Many of the third generation are borderline cases of feeblemindedness.

The offspring of the fourth daughter, II 10, who also married into a normal family, show some normal traits and also high-grade feeblemindedness and a little alcoholism. Three of the eight children who grew to maturity are normal. One of the feebleminded sons, III 47, was imprisoned for attempted rape, and afterwards married his cousin by whom he had five feebleminded children. This family is the lowest grade mentally, of any of the third generation, though several others are high-grade feebleminded families.

The second family, whose pedigree is plotted on Chart B, is not characterized by much alcoholism, but rather by shiftlessness and a stolid dullness. There are both high and low grades of feeblemindedness, epilepsy, and some normal traits. The original ancestors were probably a little more energetic than the originators of the above pedigree, for they owned a small farm. The father was not very intelligent, however, and the mother very neurotic. All of their eleven children of whom anything is known were feebleminded or neurotic; five of them married and had families.

The descendants of II 1 are the most defective branch of this pedigree and form a third of the individuals on this chart. II 1 married a feebleminded man by whom she had seven defective children and one who is of average intelligence. The latter had no children but her six feebleminded brothers and sisters who married produced twenty-nine children for the next generation. Four of these were comparatively normal, two died in infancy, and the remaining twenty-three vary in intelligence from the grade of a moron to an epileptic imbecile. The fraternity to which this imbecile belongs (children of III 14 and 15) is noteworthy on account of its number of epileptics and dependents. Four of the thirteen children have had epilepsy and ten have been taken away from the parents because they were neglected. The one child, III 3, of II 1 and 2 who did not marry, is extremely feebleminded and has been in prison for arson. His sister, III 11, is the individual who married into the family plotted on Chart A and appears there as the wife of III 1 and the mother of a large defective family.

Children of II 9 and her alcoholic husband show alcoholism, epilepsy, and some normal traits. Six of her children died in infancy. The two who have epilepsy are able to support themselves. This is the most respectable fraternity on this chart.

Nothing is known of the illegitimate children of II 12, but four of her five legitimate children by a feebleminded, choreic man lived to maturity and are typical high grade feebleminded persons,—shiftless, easily influenced, dull and alcoholic. One son married, and had two hydrocephalic twins who died; and one daughter has ten children all but one of whom are high-grade feebleminded individuals. Those of school age are very backward in their studies. The one daughter who is superior to her brothers and sisters married, and has a daughter who has married a respectable man and has a good home.

The descendants from II 17, who married an eccentric man, show insanity, eccentricity, and feeblemindedness in the few cases of which data were obtainable. One son

murdered his uncle and has been sent to the Hospital for Criminally Insane. The feebleminded son, III 61, has eight children, most of whom show signs of mental deficiency.

The high-grade feebleminded daughter, II 19, had but one illegitimate and one legitimate child. The former is epileptic, but has no children. The husband of II 19 is also epileptic. Their one son, however, has had no attacks of epilepsy, but is a feebleminded neurasthenic. He has married a feebleminded woman and has three deficient children.

On Chart C, I 1 is the brother of the originator of Chart A, while the other half of the wheel is made up of a family into which many of the previous families have married. The traits which are most prominent here are alcoholism, laziness, and some feeblemindedness. As a whole, the families on Chart C are a little more intelligent than those on the other two charts.

From the one son of the alcoholic ancestor, I 1, there were six feebleminded or alcoholic children, one fairly normal son, and one daughter who died in infancy. Four persons in the next generation are very feebleminded, IV 1, IV 11, IV 15, IV 38. The others are high-grade or normal. Two sons, III 7 and III 9, have large families of ten and twelve children. Two older members of one fraternity have shown an inability to control sexual desires. The school children from both of these families lack attention and mental energy.

The children of I 3 and 4 were extremely shiftless. Two of them were very alcoholic. II 3, one of these, married a woman who became insane late in life. They had eight children, one of whom is insane, three alcoholic, one shiftless, and feebleminded, one normal, and the other two are unknown. The normal girl married her own cousin and has an alcoholic son and an imbecile daughter.

The daughter, II 8, who married a high-grade feebleminded man had two normal and two alcoholic children.

From II 12, a feebleminded, shiftless man, has sprung an indolent group of feebleminded persons, with the one exception of a daughter who has moved to a distant town and who seems to be normal. The second generation from II 12, the school children, are lazy and unable to progress in their studies.

The conclusion of this brief survey, then, must be that the second and third generations from a union of mentally defective individuals show an accumulation and multiplication of bad traits, even though a few normal persons also appear from such unions. It is also evident that certain traits tend to follow certain lines of descent, so that after one generation, related families may each have a different characteristic trait. The outer circle on each chart contains a comparatively large number of individuals designated as normal. These are the undeveloped children who will be a constantly changing factor for several years. So the increase in the number of so called normals in the growing generation cannot be taken offhand for evidence that the old stock is improving. The fact that these children have not yet displayed all their potentialities is one that must be considered.

IV. INHERITANCE

In view of the difficulties already pointed out in analyzing individuals accurately, the study of the inheritance of their traits can be only suggestive. It may show tendencies where it cannot afford clean-cut laws. Let us assume for the moment that feeblemindedness is a unit, and acts as a simple recessive to normality. Here we are confronted by the difficulty that in "feeblemindedness" as the term is commonly used, several degrees are recognized. We have recognized two such degrees and called them "high-grade feeblemindedness," and "low-grade feeble mindedness." This gives us three grades in an unanalytical series; viz., normality, high-grade feeblemindedness, low-grade feeblemindedness. Let us test the hypotheses that feeblemindedness of any grade is "recessive" to normality; and that in like manner low-grade feeblemindedness is recessive to high-grade feeblemindedness and normality.

To aid in this test we may compare the proportion of defectives arising from each of the six theoretical matings. In the first hypothesis, according to the formulæ of these matings "N" stands for normality and "n" for the absence of normality (or high-grade and low-grade feeblemindedness massed together). Now the six matings are:

Mating.	Percent of Defectives.		Mating.	Percent of Defectives.	
	Expected.	Found.		Expected.	Found.
1. NN × NN	0	0	4. Nn × Nn	25%	33.2%
2. NN × Nn	0	0	5. Nn × nn	50%	53.6%
3. NN × nn	0	37.5%	6. nn × nn	100%	77.3%

Two letters are used to represent the constituion of the germ cells of each parent, because these germ cells may be of two kinds as well as all alike. Opposite each mating is given the percentage of offspring, who, on typical "Mendelian" expectation should be "defective" in high or low degree, and also the actual percentage found. The results are plotted in Fig. 1 in a graphic form for a comparative study. These numbers are in agreement in matings 1 and 2 only; deviate widely in mating 3, and for the other matings run fairly close. In respect to mating 1, the accord with expectation is largely without significance, because just the absence of defectives from two normal parents is the main criterion for classifying in mating 1. In mating 6, the case of nulliplex by nulliplex,—hypothetically a pure recessive strain,—77.3 per cent. of the children are defective where 100 per cent. is expected. This large majority on the side where all of the offspring were expected indicates that the tendency of nulliplex by nulliplex is to reproduce itself. The 22.7 per cent. discrepancy requires some further explanation. It is evident that the hypothesis which includes all mental defects in one category does not fit the Mendelian expectation very closely.

A more careful analysis of some of the matings in case 6 may throw some light on the reasons for this misfit. The children who are classed as normal in the cases of IV 4 and 5, IV 33 and consort, III 27 and consort, III 39 and consort, III 46 and consort, on Chart A and IV 27 and 28 on Chart B, are still so young and undeveloped that their traits now exhibited are not a reliable index of their true potentialities, but, apart from age,

the results indicate that we are not dealing with a simple Mendelian phenomenon, simply because we are not making a study of one trait at a time. Take, for instance, the cases of those adults of feebleminded parentage, who are plainly much superior to their parents and to their defective brothers and sisters. Families of III 28 and 29, II 6 and 7

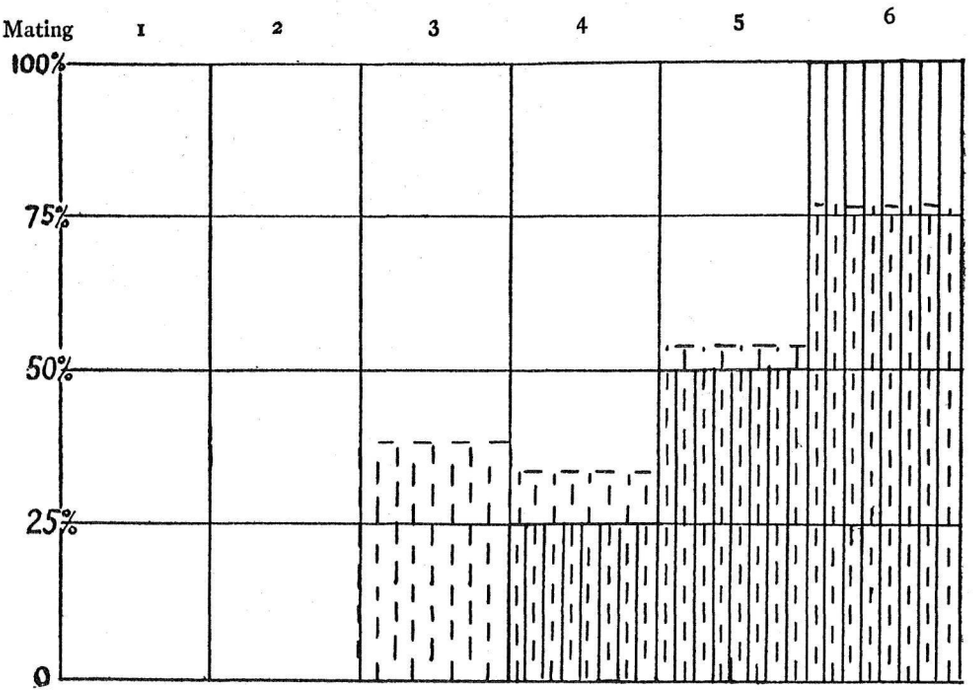

FIG. 1.

on Chart A, and II 1 and 2, III 14 and 15 and II 12 and 13 on Chart B show such variations.

In the family of III 28 and 29 on Chart A, IV 76 is a daughter about seventeen years old. Her filthy home shows the shiftless, untidy habits of both parents. The father is rough and boisterous and often ugly; his wife is more quiet. In contrast to her parents and her home, this girl is neat about her person, comparatively quiet in her manners, and responds intelligently in general conversation. She had to leave school on account of severe heart trouble, but was interested enough in her lessons to attempt to study at home. Conditions in the home, however, prevented her from accomplishing much and she soon gave up the attempt. Two children who died, IV 75 and 77, are reported to have been very like her, while all the rest of the family are more or less feebleminded. In the offspring of II 6 and 7, both of whom were decidedly deficient mentally, there are two practically normal girls. One of them, III 34, is a borderline case, but the other is more definitely normal. She has a comfortable home which she keeps fairly neat. Her conversation on her husband's business, on school matters and on her children disclosed the ideals and ambitions of a woman of ordinary intelligence. In the same fraternity are alcoholism, feeblemindedness, and cretinism.

One daughter of II 1 and 2 on Chart B presents a decided contrast to her parents and her numerous feebleminded brothers and sisters. None of the latter have risen above the

grade of shiftless, unintelligent laborers and loafers, such as their parents were. She was associated with them in childhood and later was engaged in domestic service or a similar employment. She married a normal, industrious man who was able to furnish her with a good home. She is comparatively energetic, ambitious and neat. As a member of a local church, she mingles in its society and shows the ability and intelligence of an ordinary person. In her brother's family, III 14 and 15, there are two daughters in a fraternity of thirteen, who are capable of maintaining the usual standards of life. These girls were removed from home when eight and ten years old respectively. Their youth was spent in domestic service. Now, one of them is somewhat shiftless in her housekeeping, but aside from this carelessness she shows no marked defects. She responds to the interests and duties of her station in life as well as the average woman. Her sister is more careful of her home and has taken care of an elderly invalid, besides her own family. Doubtless an improved environment has played a part in the success of these two sisters, but others in the same fraternity who had had similar advantages (see IV 37 and IV 39) have been unable to react to them, and still exhibit evidences of feeblemindedness, such as untrustworthiness, poor judgment and immoral tendencies.

These facts raise the question whether an analysis on the basis of high and low grades of feeblemindedness is not too broad. We may find one case of feeblemindedness wherein the individual is cruel, and keen in the pursuit of mischief, but unable to learn, and another case in which he is kind and learns quite readily, but is shiftless and devoid of judgment and the ability to apply his knowledge. Such instances seem to indicate that these different traits which characterize the types of feeblemindedness may furnish a truer basis for a theory of inheritance. One combination of certain traits presents one sort of feeblemindedness, and another combination another sort. Working on this hypothesis, the possibility of obtaining from two parents whose defects are due to different traits (or the lack of them) a child who may be superior to either parent as a member of society, is to be expected. For instance, if such traits follow the Mendelian principle, a man who is industrious but apathetic and unable to connect cause and effect (*i. e.*, lacks good judgment) so that he cannot compete in business, married to a shiftless woman who is keen and shrewd, even to a vice, may have offspring in which the father's industry and the mother's mental ability are combined so that they may be superior to either parent. For if the feeblemindedness of the father's type and that of the mother's type are gametically independent and each recessive to the normal condition, they may produce normal children according to the following formula.

Trait.	Gametic Description of Father.	Gametic Description of Mother.	Gametic Description of Offspring.	Somatic Description of Offspring.
Judgment (J)	jj	JJ	all Jj	All persons have good judgment.
Industry (I)	II	ii	all Ii	All are industrious.

The make-up of the father's germ cells (gametes) in respect to judgment is nulliplex, and is expressed by jj, while the gametic make-up of the mother in respect to the same

trait may be duplex, since she exhibits the dominant conditions, and is expressed by JJ. In respect to industry, the father's gametic make-up may be II and the mother's ii. The children of this union, in respect to the first trait, would all appear normal and gametically would be Jj, or simplex, for that type of feeblemindedness. In a similar manner all the children would be normal in respect to industry, but gametically they would be simplex Ii.

Again, using the same union as an illustration, if the father in addition to his nulliplex condition for judgment were also simplex in regard to industry, one half of the children would be nulliplex for the latter trait, as is shown by the following formula.

Trait.	Gametic Description of Father.	Gametic Description of Mother.	Gametic Description of Offspring.	Somatic Description of Offspring.
Judgment	jj	JJ	100% Jj	All persons have good judgment.
Industry	Ii	ii	50% Ii 50% ii	50% are also industrious but 50% are shiftless.

In a similar manner, it can be shown that if the mother were also simplex in regard to judgment, one half of the children would exhibit that type of feeblemindedness. In fact it is probable that a person who shows one type of feeblemindedness is simplex, rather than duplex, in respect to other types. For the unwritten but powerful social law which prevents one stratum of society from marrying into another forces one type

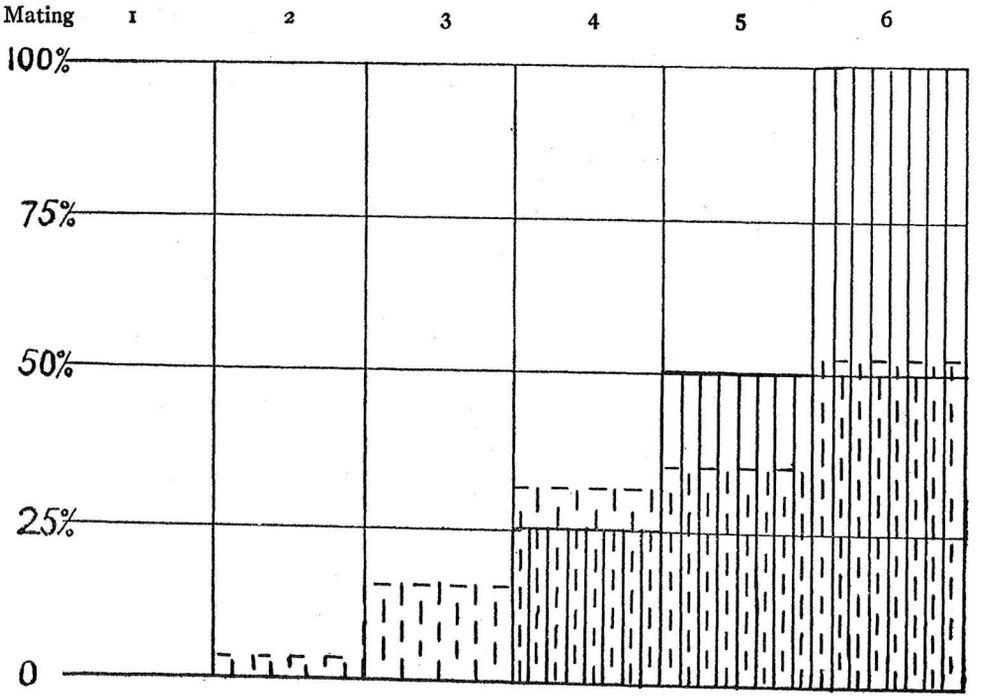

FIG. 2.

of feeblemindedness to mate with another. In a few generations, then, the offspring may be feebleminded in several different ways, we may get many defective children and a

few normal ones. The large percentage of defective children from the mating of defectives with defectives points to such an accumulation of undesirable traits, rather than any dispersion of them. The further study, therefore, of both abnormal and normal characteristics should proceed on the basis of the elementary trait or "unit character."

Again, when we test the hypothesis that low-grade feeblemindedness is recessive to high-grade feeblemindedness, we fail even more strikingly to fulfill expectation in matings 5 and 6. High-grade feeblemindedness in this case is massed with normality and included under the symbol "N", while "n" refers only to low-grade feeblemindedness. The graphic form of the correlation between the expected and observed results is plotted in Fig. 2.

Matings.	Percent of Defectives.		Matings.	Percent of Defectives.	
	Expected.	Found.		Expected.	Found.
1. NN × NN	0	0	4. Nn × Nn	25%	30.7%
2. NN × Nn	0	2.7%	5. Nn × nn	50%	33.7%
3. NN × nn	0	14.3%	6. nn × nn	100%	52.6%

The reason for this more striking failure to meet expectation is that, having defined our recessive or defective class even more strictly, a still larger proportion of offspring show no such defectiveness, just because the parents again do not lack similar traits.

The analysis of the data, then, gives statistical support to the conclusion abundantly justified from numerous other considerations, that feeblemindedness is no elementary trait, but is a legal or sociological, rather than a biological term. Feeblemindedness is due to the absence, now of one set of traits, now of quite a different set. Only when both parents lack one or more of the same traits do the children all lack the traits. So, if the traits lacking in both parents are socially important the children all lack socially important traits, *i. e.*, are feebleminded. If, on the other hand, the two parents lack different socially significant traits, so that each parent brings into the combination the traits that the other lacks, all of the children may be without serious lack and all pass for "normal". However, inasmuch as many of the traits of such "normals" are derived from one side of the house only (are simplex), they may, on mating persons of like origin with themselves, produce obviously defective offspring.

V. MARRIAGE SELECTION

The large majority of the matings which are represented in this report are of defectives with defectives. A few of those who have drifted into a different part of the country have married persons of a higher degree of intelligence, but the most of such wanderers have, even in a new location, found mates who were about their equal in intelligence and ambition.

In a rural district which supports such a class of semi-paupers as has been described the social advantages which come to them are meagre and narrow. After a long day's work on the farm or in the kitchen, the farm laborer and kitchen girl find their recreation in an evening of gossip, for they know everyone in the neighborhood. They may live

near enough to their homes to go there at night. If such is the case, one dirty kitchen may hold half a dozen men and the women of the house. They smoke and drink cider and pass rude jests together and in the end sometimes fight. Away from home, they are ostracized by the other social classes. They occasionally have a dance which will bring together many of the same class from neighboring towns.

Under these circumstances it is not surprising that early marriages are the rule. After the legal age is passed, school work is dropped and, for a girl, the servant's life often begins, unless she is married at once. At any rate she anticipates marriage and works with that as a goal, not to escape work, but to gain a certain independence and that end of all effort, "to be married". Nor is it surprising that cousin marriages are frequent. In fact, even where no known relationship exists between the contracting parties, it is probable that they are from the same strains.

The early marriage is usually followed by a large family of children. Some die in infancy in nearly every home, but most of them survive a trying babyhood and develop fairly robust physical constitutions. They are born into the same narrow circle that their parents were, and unless some powerful factor changes the routine, they are apt to follow the same path until past middle age. For, except where tuberculosis has ravaged, disease has spared these people.

So it is that the meagre social life, the customs of their parents, the natural ostracism of the higher classes, and the individual's preference for a congenial mate induce endogamy, or in-marriage, among the mentally deficient.

It has been maintained that the dispersion of such communities of feebleminded persons would stimulate out-marriage and that this would increase the chance of marriage with different and perhaps better blood and thus diminish the frequency of appearance of defects in the next generation. The instances of the two daughters, II 8 and 10 on Chart A, who married comparatively normal men supports this view. Their progeny are, as a whole, a better class of citizens than the progeny of their sisters who mated with feebleminded men. Nevertheless, the fifty percent of the offspring who were feebleminded or criminal, even in these cases, constitute a menace which should be considered.

Another case still more to the point is that of III 19 on Chart A. He was from a criminal, alcoholic family and possessed both of these traits. He migrated to another state and married a woman who had more intelligence than either of the normal husbands of II 8 or 10. Only one of their children shows the criminal tendencies of the father, though the two youngest are neurotic, and backward in school. After the mother found out the real character of her husband and his family, she left him. While such repression of defective traits in the progeny by marriage into normal strains is beneficial to the community, it involves a great sacrifice on the part of the normal consort. However, the consort is only one; the progeny many.

The more frequent result of the migration of a feebleminded individual is his marriage into *another defective strain* in a different part of the country. The change in locality usually means that two different kinds of feeblemindedness are united instead of two similar types. The pedigree of the consort of III 9 on Chart B illustrates this point.

Here is a union of stolid, shiftless feeblemindedness with a type of mental defect close to insanity. Let us examine this case in detail. III 9 on Chart A was a farm laborer who migrated a hundred miles eastward. He located in a rural community and married a girl whose family had lived in this place for several generations. Her family's pedigree is given below in Fig. 3 and its history is the following.

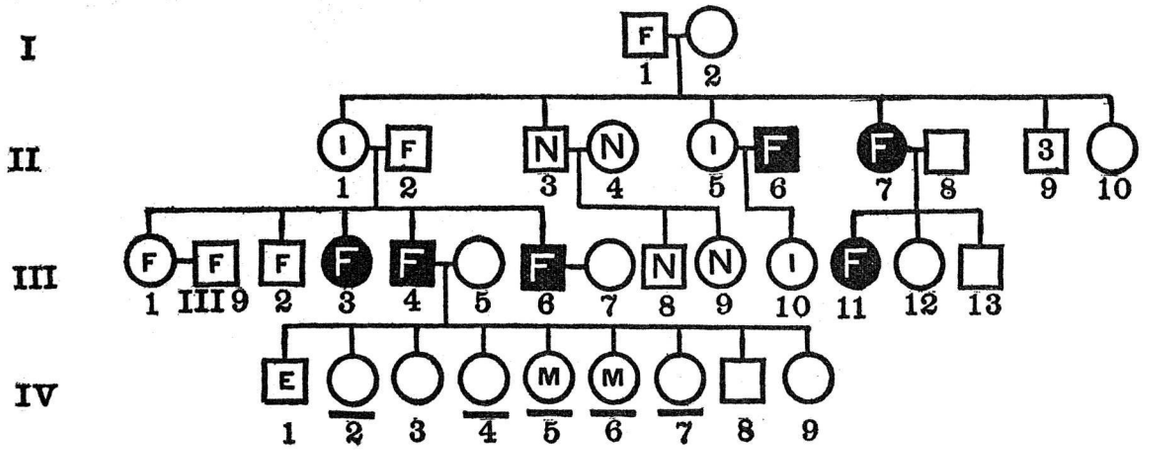

FIG. 3.

The grandfather was always pointed out as a simple-minded man, harmless and inefficient. Nothing is known of his wife. They had eight children; one of whom is normal, three are mentally affected and the conditions of four are unknown.

The mother of the wife in question was known as a "crazy fool". Early in life she appeared merely feebleminded, but symptoms of insanity developed later. She now has a strong religious mania. She married a man who lacked judgment and ambition. He was easily imposed upon. He lived with her until they had five children, then, unable to endure his wife's mental condition, he left home. All of their children are feebleminded.

III 1 is the high-grade feebleminded girl who married III 9 on Chart B. III 2 was a son who worked out as a farm laborer. He was feebleminded and naturally the butt of his companions. When twenty years old, he was killed by eating poisoned melons by mistake. III 3 is a daughter who died at sixteen years of age and was defective mentally and physically. III 4 is a son now about fifty, who works for a farmer. He is a typical feebleminded man. He lives in a tenant house with one son. His wife, who is described as a fairly respectable woman, left him and took the two youngest children with her. They had nine children in all, five of whom are in institutions.

The oldest son (IV 1) who lives with his father has typical epileptic attacks; he does a little work as a farm laborer. The second child (IV 2) has been taken to the State Industrial School for Girls. The third one (IV 3) has begun the usual occupation for such girls,—housework in a farmer's family, though she is but fifteen. She is about normal mentally. Finally, there are four girls in the County Home for Children. Two of them have severe attacks of migraine, and none of them are strong children.

The last son married and left that part of the country. He was not normal, whether feebleminded or insane could not be determined.